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09/924,204	08/07/2001	Karen Carpenter	END920010024US1	1139

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EXAMINER

CHANG, RICK KILTAE

ART UNIT PAPER NUMBER

3729

DATE MAILED: 12/31/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/924,204

Applicant(s)

CARPENTER ET AL.

Examiner

Rick K. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-65 is/are pending in the application.
- 4a) Of the above claim(s) not cited in item 6) below is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28-31, 33, 35-44, 49, 51-54, 56 and 58-64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it does not include steps. Correction is required. See MPEP § 608.01(b).

Election/Restrictions

2. Newly submitted claims 28 (either misnumbered or repeated for unknown reasons) and 66-67 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: they are directed to product and reasons are set forth in Paper No. 3.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 28 (either misnumbered or repeated for unknown reasons) and 66-67 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

NOTE: applicants repeated claim number 28 and provided completely new invention. Further, claims 66-67 are depended on this erroneously repeated claim number 28.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 28-31, 33, 35-41, 51-54, 56, and 58-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiStefano et al (US 5,558,928) in view of Noddin et al (US 5,276,955).

DiStefano discloses testing the substructures for electrical integrity, a DM laminate 10b and a first multilevel conductive via (26b) which is a stacked via (due to different layers of dielectric and conductors), a deep via and a simple-deep via, N=2, 26c is a second multilevel conductive via, 22 is a first metal layer and 30 is a second metal layer, 26 begins at the outer surface and extends to a fraction of a total thickness and electrically coupling 26b, half way (1/2) of 26 is a fraction of full thickness, 30 is a first metal layer within an interior of 10a, 26 begins from one end and extends to the opposite end.

DiStefano fails to disclose that the substructure is a complex power-signal and the first metal layer is a complex power-signal.

Noddin discloses 14 and 16 are complex power-signal and they are connected a conductor via as shown in Fig. 6 to conductive structures mounted to 18.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify DiStefano by the substructure is a complex power-signal and the first metal layer is a complex power-signal, as taught by Noddin, for the purpose of providing complex power-signal to an electronic component mounted on the interposer.

NOTE: Please provide reference numerals (either in parentheses next to the claimed limitation or in a table format with one column listing the claimed limitation and another column listing corresponding reference numerals in the remark section of the response to the Office Action) to all the claimed limitations as well as support in the disclosure for better clarity. Applicants are duly reminded that a full and proper response to this Office

Action that includes any amendment to the claims and specification of the application as originally filed requires that the applicant point out the support for any amendment made to the disclosure, including the claims. See 37 CFR 1.111 and MPEP 2163.06.

5. Claims 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiStefano et al (US 5,558,928) in view of Noddin et al (US 5,276,955).

DiStefano/Noddin teach the invention as described with respect to claims 28-31, 33, 35-41 and 64 above. DiStefano discloses a conductive through hole (Fig. 3 shows all the structures are stacked together to form a conductive through hole).

DiStefano/Noddin fail to disclose providing another DM laminate to the opposite side of the CPS substructure.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide another DM laminate, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. Further, it would have been obvious to one having ordinary skill in the art at the time the invention was made to position another DM laminate to the opposite side of the CPS substructure, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

NOTE: Please provide reference numerals (either in parentheses next to the claimed limitation or in a table format with one column listing the claimed limitation and another column listing corresponding reference numerals in the remark section of the response to the Office Action) to all the claimed limitations as well as support in the disclosure for better clarity. Applicants are duly reminded that a full and proper response to this Office

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Action that includes any amendment to the claims and specification of the application as originally filed requires that the applicant point out the support for any amendment made to the disclosure, including the claims. See 37 CFR 1.111 and MPEP 2163.06.

6. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over DiStefano et al (US 5,558,928) in view of Noddin et al (US 5,276,955), and further in view of Koontz et al (US 6,181,004).

DiStefano/Noddin teach the invention as described with respect to claims 28-31, 33, 35-44 and 64 above.

DiStefano/Noddin fail to disclose mounting a semiconductor chip.

Koontz discloses in Fig. 7 a semiconductor chip is mounted to an assembly.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify DiStefano/Noddin by mounting a semiconductor chip, as taught by Koontz, for the purpose of electrically communicating with the chip to process data or share information with other parts of the assembly.

Response to Arguments

7. Applicant's arguments filed 11/18/03 have been fully considered but they are not persuasive.

Col. 12 teaches testing for an electrical short or an electrical open of all circuit panels and interposers. Fig. 3 shows the DM laminate 10b and the first multilevel conductive via 26b are stacked to electrically coupling to a first metal layer of the CPS substructure. Noddin discloses at least one power layer 14 (substructure) and one X-Y signal pair layer 16 (substructure), which

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are complex-power signal, in col. 7, lines 63-64. The modification is possible because any electrical device require power, ground and signals to operate.

Fig. 2 shows panels and interposers have alternating layers; therefore, the vias are stacked. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., discontinuities in sidewall smoothness at layer interfaces) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Fig. 2 shows vias are extended 1 mm down from the external surface.

Re claims 42-44 arguments, the applicants failed to provide evidence or proper reasoning why providing another DM laminate to the stack would destroy the DiStefano invention. The applicants' mere statement does not convince the Examiner.

Interviews After Final

8. Applicant note that an interview after a final rejection must be submitted briefly in writing the intended purpose and content of the interview (the agenda of the interview must be in writing). Upon review of the agenda, the Examiner may grant the interview if the examiner is convinced that disposal or clarification for appeal may be accomplished with only nominal further consideration. Interviews merely to restate arguments of record or to discuss new limitations will be denied. See MPEP 714.13 and 713.09.

Conclusion

9. Please provide reference numerals (either in parentheses next to the claimed limitation or in a table format with one column listing the claimed limitation and another

column listing corresponding reference numerals in the remark section of the response to the Office Action) to all the claimed limitations as well as support in the disclosure for better clarity. Applicants are duly reminded that a full and proper response to this Office Action that includes any amendment to the claims and specification of the application as originally filed requires that the applicant point out the support for any amendment made to the disclosure, including the claims. See 37 CFR 1.111 and MPEP 2163.06.

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

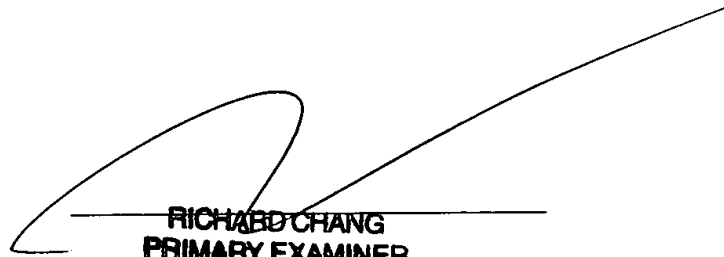
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick K. Chang whose telephone number is (703) 308-4784. The examiner can normally be reached on 5:30 AM to 1:30 PM, Monday through Thursday.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9302 for regular communications and (703) 872-9303 for After Final communications.

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RICHARD CHANG
PRIMARY EXAMINER

RC

December 30, 2003